

	Document ID	Issue Date	Pag es	Title	Current OR	Current XRef	Inventor
1	US 20030043949 A1	20030306	3353	Radio frequency data communications device	375/374		O'Toole, James E. et al.
2	US 6850583 B1	20050201	20	Clock generation apparatus	375/376	327/158; 375/355	Matsumura; Toshihiro et al.
3	US 6792063 B1	20040914	35	Frequency control/phase synchronizing circuit	375/375	327/159; 327/160; 370/516; 375/376	Ogura; Youichi
4	US 6618459 B1	20030909	24	Radio communication device and method of bit synchronization pull-in in the same	375/376	375/371; 375/373	Tada; Ken-Ichi
5	US 6542039 B1	20030401	30	Phase-locked loop apparatus and method	331/11	331/1A; 360/51; 375/376	Ogura; Youichi
6	US 6466634 B1	20021015	58	Radio frequency data communications device	375/374	340/10.1	O'Toole; James E. et al.

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7	US 6389548 B1	20020514	13	Pulse run-length measurement for HF data signal by dividing accumulated phase difference between first and second zero-crossings by single-cycle range using multiple cycle range sawtooth waveform	713/500	327/131; 327/26; 327/31; 327/33; 327/45; 327/78; 327/79; 332/109; 375/238; 375/239; 375/327; 375/340; 375/353; 375/355; 375/376; 702/189; 702/57; 702/59; 713/502	Bowles; Liam
8	US 6347128 B1	20020212	16	Self-aligned clock recovery circuit with proportional phase detector	375/376	331/11; 331/12; 375/371; 375/373; 713/400; 713/500	Ransijn; Johannes Gerardus
9	US 6320921 B1	20011120	15	Fast acquisition clock recovery using a directional frequency-phase detector	375/376	327/148; 375/375	Gu; Richard X.

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10	US 6078634 A	20000620	12	Phase-locked loop circuit with a multi-cycle phase detector and multi-current charge pump	375/376	331/1A; 331/10; 331/11; 455/260	Bosshart; Patrick W.
11	US 5943381 A	19990824	17	Multiple input frequency locked loop	375/376	455/260	Zampetti; George Phillip
12	US 5778032 A	19980707	25	Data reproducing method and data reproducing unit	375/355	375/376	Tanaka; Koichiro et al.
13	US 5751777 A	19980512	16	Multiple input frequency locked loop	375/376	455/260	Zampetti; George
14	US 5696793 A	19971209	23	Phase difference detection circuit for extended partial-response class-4 signaling system	375/294	360/51; 375/290; 375/375	Hashimura; Yoshihiro
15	US 5617374 A	19970401	21	Signal detection device and clock recovery device using the same	368/10	327/147; 327/48; 368/113; 375/327; 375/375	Ohmi; Shinichiro et al.
16	US 5572558 A	19961105	22	PID loop filter for timing recovery in a sampled amplitude read channel	375/376	375/350; 375/355; 700/42; 708/300	Beherns; Richard T.
17	US 5537442 A	19960716	35	Instantaneous phase detecting circuit and clock recovery signal generating circuit incorporated in differential demodulator	375/330	375/371; 375/373; 375/375; 375/376	Nakamura; Seizo et al.

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18	US 5485484 A	19960116	7	Digitally implemented phase and lock indicators for a bit synchronizer	375/376	327/43; 327/5; 331/15; 331/25; 331/4; 331/DIG .2; 375/327; 375/328; 375/371	Williams; Bruce H. et al.
19	US 5414741 A	19950509	25	Low phase noise oscillator frequency control apparatus and method	375/376	331/18	Johnson; Kent K.
20	US 5400364 A	19950321	41	Decision-directed digital phase locked loop	375/327	375/376	Yada; Hiroaki
21	US 5237590 A	19930817	13	Timing extraction circuit and communication system utilizing the same	375/293	370/503; 375/374; 714/707	Kazawa; Tohru et al.
22	US 5123030 A	19920616	34	Timing extraction method and communication system	375/294	370/514; 375/359; 375/376	Kazawa; Tohru et al.
23	US 4906941 A	19900306	23	Digital phase locked loop circuit	327/159	375/376	Kato; Masaaki et al.
24	US 4813005 A	19890314	6	Device for synchronizing the output pulses of a circuit with an input clock	702/117	331/1R; 331/25; 375/376	Redig; Michael J. et al.

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25	US 4585989 A	19860429	5	50% point of amplitude and phase detector	324/76.82	324/76.47; 324/76.55; 324/76.79; 327/73; 348/537; 375/376; 568/433	Matney; Earl G.
26	US 4361890 A	19821130	11	Synchronizing system	375/142	370/350; 370/516; 375/146; 375/150; 375/373; 375/376; 380/34	Green, Jr.; James H. et al.
27	US 4215239 A	19800729	7	Apparatus for the acquisition of a carrier frequency and symbol timing lock	375/365	370/514; 370/516; 375/373; 375/376	Gordy; Robert S. et al.
28	US 3878334 A	19750415	19	Data synchronizing systems	375/375	329/325; 375/376	Halpern; Peter H.
29	US 3674934 A	19720704	11	MINIMUM SHIFT KEYED (MSK) PHASE MEASUREMENT DEVICE	375/336	375/375	Gooding; Otis E. et al.

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4	US 6389548 B1	20020514	13	Pulse run-length measurement for HF data signal by dividing accumulated phase difference between first and second zero-crossings by single-cycle range using multiple cycle range sawtooth waveform	713/500	327/131; 327/26; 327/31; 327/33; 327/45; 327/78; 327/79; 332/109; 375/238; 375/239; 375/327; 375/340; 375/353; 375/355; 375/376; 702/189; 702/57; 702/59; 713/502	Bowles; Liam

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6	US 6320921 B1	20011120	15	Fast acquisition clock recovery using a directional frequency-phase detector	375/376	327/148; 375/375	Gu; Richard X.
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8	US 5943381 A	19990824	17	Multiple input frequency locked loop	375/376	455/260	Zampetti; George Phillip
9	US 5751777 A	19980512	16	Multiple input frequency locked loop	375/376	455/260	Zampetti; George
10	US 5696793 A	19971209	23	Phase difference detection circuit for extended partial-response class-4 signaling system	375/294	360/51; 375/290; 375/375	Hashimura; Yoshihiro
11	US 5617374 A	19970401	21	Signal detection device and clock recovery device using the same	368/10	327/147; 327/48; 368/113; 375/327; 375/375	Ohmi; Shinichiro et al.

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13	US 5537442 A	19960716	35	Instantaneous phase detecting circuit and clock recovery signal generating circuit incorporated in differential demodulator	375/330	375/371; 375/373; 375/375; 375/376	Nakamura; Seizo et al.
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